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WHAT IS CLAIMED IS:

- 5 1. A method for fulfilling a data service request, the method comprising:

providing an ontology description of a data service;  
providing a first logical search object operably  
coupled via a first communications link to a data provider;  
transmitting by the first logical search object to the  
10 data provider via the communications link a search request,  
the search request generated by the first logical search  
object from the data service request;

receiving by the first logical search object from the  
data provider via the communications link a data set in  
15 response to the search request; and

generating by the first logical search object a  
knowledge instance from the data set using the ontology  
description.

- 20 2. The method of claim 1 wherein the first communications link  
is adapted for communications with a database server.

3. The method of claim 1 wherein the first communications link  
is adapted for communications with a FTP server.

- 25 4. The method of claim 1 wherein the first communications link  
is adapted for communications with a Web server.

5. The method of claim 1 wherein the first communications link  
30 is adapted for communications with a file system.

6. The method of claim 1 wherein the first communications link  
is adapted for communication with a human data provider.

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7. The method of claim 1 wherein the first communications link  
is adapted for communication with a communications protocol  
proprietary to the data provider.

8. The method of claim 1 wherein the data service request is  
included in a XML document.

9. The method of claim 1, further comprising:  
providing a first workflow operably coupled to the  
logical search object; and  
transmitting by the first logical search object to the  
first workflow the knowledge instance.

10. The method of claim 9 further comprising providing a second  
logical search object operably coupled to the first  
workflow, the first workflow encapsulating the ontological  
relationship between the first and second logical search  
objects.

11. The method of claim 9, further comprising:  
providing an application server operably coupling a  
data client to the first workflow via a second  
communications link, and

receiving by the application server from the data  
client via the second communications link a data service  
request message, the data service request message including  
the data service request;

transmitting by the application server to the first  
workflow the data service request message; and

transmitting by the first workflow to the logical  
search object the data service request message.

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12. The method of claim 10, wherein the second communications link is adapted for communications using SMTP.

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13. The method of claim 10, wherein the second communications link is adapted for communications using JMS.

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14. The method of claim 10, wherein the second communications link is adapted for communications using HTTP.

15. The method of claim 10, wherein the second communications link is adapted for communications using RMI.

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16. The method of claim 9, wherein the logical search object is specified by the first workflow.

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17. The method of claim 11, wherein the first workflow is specified by the application server using the service request message.

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18. The method of claim 10 further comprising:  
    providing a formatter; and  
    formatting by the formatter the data set encapsulated in the knowledge instance into a format requested by the data client.

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19. The method of claim 9 further comprising providing a second workflow operably coupled to the first workflow.

20. A method for accessing by a software object a data provider via a communications link, comprising:

    receiving by the software object from a second software object a search request message document;

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generating by the software object a data request for  
the data provider from the search request message document;  
5 transmitting by the software object to the data  
provider the data request via the communications link;  
receiving by the software object from the data  
provider a data set via the communications link; and  
generating by the software object a semantic object  
10 from the data set.

21. The method of claim 20 wherein generating by the software  
object a semantic object from the data set further  
includes:

15 providing a parser adaptor operably coupled to the  
software object;

providing a parser semantic description of the data  
set for use by the parser adaptor;

providing a semantic object semantic description;

20 generating by the parser adaptor extracted data from  
the data set using the parser semantic description; and

generating by the parser adaptor the semantic object  
using the extracted data according to the semantic object  
semantic description.

25 22. The method of claim 20 wherein generating by the software  
object a data request for the data provider from the search  
request further includes:

30 providing a request builder operably coupled to the  
software object;

providing a native object operably coupled to the  
request builder, the native object encapsulating  
implementation details of a data request for the data  
provider;

providing a native semantic description including  
ontology information describing a data structure used by  
5 the request builder to build the data request for the data  
provider;

transmitting by the request builder to the native  
object the search request; and

10 generating by the native object the data request from  
the search request using the native semantic description.

23. A data processing system adapted to fulfill a data service  
request, comprising:

a processor; and

15 a memory operably coupled to the processor and having  
program instructions stored therein, the processor being  
operable to execute the program instructions, the program  
instructions including:

20 providing an ontology description of a data  
service;

providing a first logical search object operably  
coupled via a first communications link to a data  
provider;

25 transmitting by the first logical search object  
to the data provider via the communications link a  
search request, the search request generated by the  
first logical search object from the data service  
request;

30 receiving by the first logical search object from  
the data provider via the communications link a data  
set in response to the search request; and

generating by the first logical search object a  
knowledge instance from the data set using the  
ontology description.

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24. The data processing system of claim 23 wherein the first  
communications link is adapted for communications with a  
5 database server.

25. The data processing system of claim 23 wherein the first  
communications link is adapted for communications with a  
FTP server.

10 26. The data processing system of claim 23 wherein the first  
communications link is adapted for communications with a  
Web server.

15 27. The data processing system of claim 23 wherein the first  
communications link is adapted for communications with a  
file system.

20 28. The data processing system of claim 23 wherein the first  
communications link is adapted for communication with a  
human data provider.

25 29. The data processing system of claim 23 wherein the first  
communications link is adapted for communication with a  
communications protocol proprietary to the data provider.

30. The data processing system of claim 23 wherein the data  
service request is included in a XML document.

30 31. The data processing system of claim 23, the program  
instructions further including:

providing a first workflow operably coupled to the  
logical search object; and

transmitting by the first logical search object to the  
35 first workflow the knowledge instance.

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32. The data processing system of claim 31, the program instructions further including providing a second logical search object operably coupled to the first workflow, the first workflow encapsulating the ontological relationship between the first and second logical search objects.

33. The data processing system of claim 31, the program instructions further including:

providing an application server operably coupling a data client to the first workflow via a second communications link, and

receiving by the application server from the data client via the second communications link a data service request message, the data service request message including the data service request;

transmitting by the application server to the first workflow the data service request message; and

transmitting by the first workflow to the logical search object the data service request message.

34. The data processing system of claim 32, wherein the second communications link is adapted for communications using SMTP.

35. The data processing system of claim 32, wherein the second communications link is adapted for communications using JMS.

36. The data processing system of claim 32, wherein the second communications link is adapted for communications using HTTP.

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37. The data processing system of claim 32, wherein the second  
communications link is adapted for communications using  
5 RMI.

38. The data processing system of claim 32, wherein the logical  
search object is specified by the first workflow.

10 39. The data processing system of claim 33, wherein the first  
workflow is specified by the application server using the  
service request message.

40. The data processing system of claim 32, the program  
15 instructions further including:  
providing a formatter; and  
formatting by the formatter the data set encapsulated  
in the knowledge instance into a format requested by the  
data client.

20 41. The data processing system of claim 31, the program  
instructions further including providing a second workflow  
operably coupled to the first workflow.

25 42. A data processing system adapted to access a data provider  
via a communications link, comprising:

a processor; and

30 a memory operably coupled to the processor and having  
program instructions stored therein, the processor being  
operable to execute the program instructions, the program  
instructions including:

receiving by a software object a search request  
message document;

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generating by the software object a data request  
for the data provider from the search request message  
document;

transmitting by the software object to the data  
provider the data request via the communications link;

receiving by the software object from the data  
provider a data set via the communications link; and

generating by the software object a semantic  
object from the data set.

43. The data processing system of claim 42 wherein the program  
instructions for generating by the software object a  
semantic object from the data set further include:

providing a parser adaptor operably coupled to the  
software object;

providing a parser semantic description of the data  
set for use by the parser adaptor;

providing a semantic object semantic description;  
generating by the parser adaptor extracted data from  
the data set using the parser semantic description; and

generating by the parser adaptor the semantic object  
using the extracted data according to the semantic object  
semantic description.

44. The data processing system of claim 42 wherein the program  
instructions for generating by the software object a data  
request for the data provider from the search request  
further include:

providing a request builder operably coupled to the  
software object;

providing a native object operably coupled to the  
request builder, the native object encapsulating

implementation details of a data request for the data provider;

5 providing a native semantic description including ontology information describing a data structure used by the request builder to build the data request for the data provider;

10 transmitting by the request builder to the native object the search request; and

generating by the native object the data request from the search request using the native semantic description.

15 45. A computer readable media embodying program instructions for execution by a computer, the computer program instructions adapting a computer to fulfill a data service request, the program instructions comprising:

providing an ontology description of a data service;

20 providing a first logical search object operably coupled via a first communications link to a data provider;

transmitting by the first logical search object to the data provider via the communications link a search request, the search request generated by the first logical search object from the data service request;

25 receiving by the first logical search object from the data provider via the communications link a data set in response to the search request; and

30 generating by the first logical search object a knowledge instance from the data set using the ontology description.

46. The computer readable media of claim 45 wherein the first communications link is adapted for communications with a database server.

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47. The computer readable media of claim 45 wherein the first  
communications link is adapted for communications with a  
5 FTP server.

48. The computer readable media of claim 45 wherein the first  
communications link is adapted for communications with a  
Web server.

10 49. The computer readable media of claim 45 wherein the first  
communications link is adapted for communications with a  
file system.

15 50. The computer readable media of claim 45 wherein the first  
communications link is adapted for communication with a  
human data provider.

20 51. The computer readable media of claim 45 wherein the first  
communications link is adapted for communication with a  
communications protocol proprietary to the data provider.

25 52. The computer readable media of claim 45 wherein the data  
service request is included in a XML document.

53. The computer readable media of claim 45, the program  
instructions further comprising:

providing a first workflow operably coupled to the  
logical search object; and

30 transmitting by the first logical search object to the  
first workflow the knowledge instance.

54. The computer readable media of claim 53, the program  
instructions further comprising providing a second logical  
35 search object operably coupled to the first workflow, the

first workflow encapsulating the ontological relationship between the first and second logical search objects.

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55. The computer readable media of claim 53, the program instructions further comprising:

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providing an application server operably coupling a data client to the first workflow via a second communications link, and

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receiving by the application server from the data client via the second communications link a data service request message, the data service request message including the data service request;

transmitting by the application server to the first workflow the data service request message; and

transmitting by the first workflow to the logical search object the data service request message.

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56. The computer readable media of claim 54, wherein the second communications link is adapted for communications using SMTP.

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57. The computer readable media of claim 54, wherein the second communications link is adapted for communications using JMS.

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58. The computer readable media of claim 54, wherein the second communications link is adapted for communications using HTTP.

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59. The computer readable media of claim 54, wherein the second communications link is adapted for communications using RMI.

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60. The computer readable media of claim 54, wherein the logical search object is specified by the first workflow.

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61. The computer readable media of claim 54, wherein the first workflow is specified by the application server using the service request message.

10 62. The computer readable media of claim 54, the program instructions further comprising:

providing a formatter; and

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formatting by the formatter the data set encapsulated in the knowledge instance into a format requested by the data client.

63. The computer readable media of claim 53, the program instructions further comprising providing a second workflow operably coupled to the first workflow.

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64. A computer readable media embodying program instructions for execution by a computer, the computer program instructions adapting a computer to access a data provider via a communications link, the program instructions comprising:

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receiving by a software object a search request message document;

generating by the software object a data request for the data provider from the search request message document;

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transmitting by the software object to the data provider the data request via the communications link;

receiving by the software object from the data provider a data set via the communications link; and

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generating by the software object a semantic object from the data set.

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65. The data processing system of claim 64 wherein the program instructions for generating by the software object a semantic object from the data set further comprise:

5 providing a parser adaptor operably coupled to the software object;

providing a parser semantic description of the data set for use by the parser adaptor;

10 providing a semantic object semantic description;

generating by the parser adaptor extracted data from the data set using the parser semantic description; and

15 generating by the parser adaptor the semantic object using the extracted data according to the semantic object semantic description.

66. The data processing system of claim 64 wherein the program instructions for generating by the software object a data request for the data provider from the search request further comprise:

20 providing a request builder operably coupled to the software object;

25 providing a native object operably coupled to the request builder, the native object encapsulating implementation details of a data request for the data provider;

30 providing a native semantic description including ontology information describing a data structure used by the request builder to build the data request for the data provider;

transmitting by the request builder to the native object the search request; and

generating by the native object the data request from the search request using the native semantic description.

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